Surgical Technique

smith&nephew

PERI-LOC◇

Locked Plating System

Calcaneal Locking Plate



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Calcaneal Locking Plate Surgical Technique

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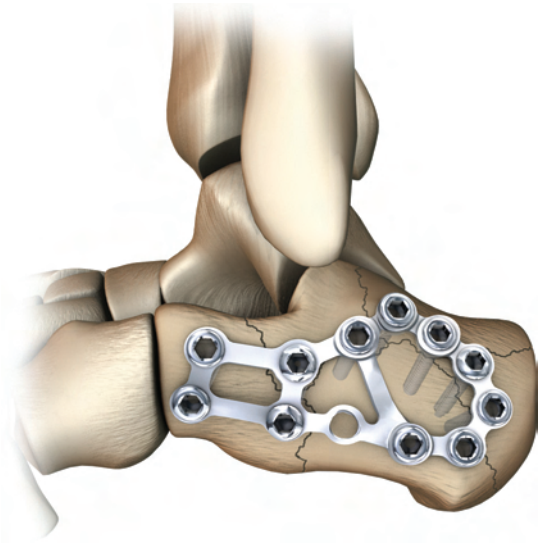
The technique description herein is made available to the healthcare professional to illustrate the author's suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the specific patient.

Introduction

The PERI-LOC® Locked Plating System combines the advantages of locked plating with the versatility and benefits of traditional plates and screws. Utilizing both locking and non-locking screws, the PERI-LOC system allows for the creation of a fixed-angle construct capable of resisting angular collapse. Its enhanced stability also allows it to function as an effective fracture reduction aid.

A simple, intuitive instrument set featuring standardized drill bits and screwdrivers along with color-coded drill guides, helps make the PERI-LOC system efficient and easy to use.

The PERI-LOC Calcaneal Locking Plates are available as left/right-specific large and small size implants. They are compatible with the PERI-LOC Small Fragment Instrument and Implant Set. Their precise screw trajectories, size variations and locking capabilities provide a stable construct for predictable reconstruction of complex fractures of the calcaneus.



Indications

The PERI-LOC◇ Calcaneal Locking Plate is indicated for fixation of fractures, non-unions and osteotomies of the calcaneus.





Plate Features

- Anatomically designed to match the lateral aspect of the calcaneus
- Large (68mm) and small (60mm) sizes
- Left/right-specific
- Low implant profile (1.1mm) to reduce soft tissue irritation
- 316L stainless steel for strength
- Locking/non-locking option in all 12 screw holes
- Screw holes accept 3.5mm Cortex, 3.5mm Locking and 4.0mm Cancellous Screws
- Thicker locking screw holes (2.3mm) buttress the sustentaculum tali, posterior facet and lateral process for maximum stability



Large Calcaneal Locking Plate



Small Calcaneal Locking Plate

Surgical Technique

Patient Positioning

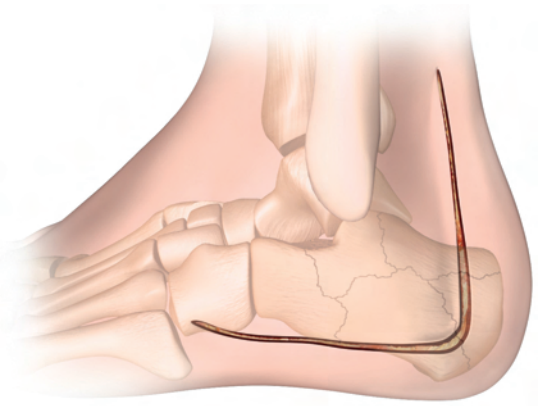
Place the patient in the lateral decubitus position on a radiolucent table with the affected limb flexed away from the unaffected limb. A support is placed beneath the affected limb to ensure that it lies parallel to the floor. The operative side (lateral) will face up.



Incision

The lateral aspect of the calcaneus is exposed through an extensile, full-thickness “L” or “J”-shaped incision.

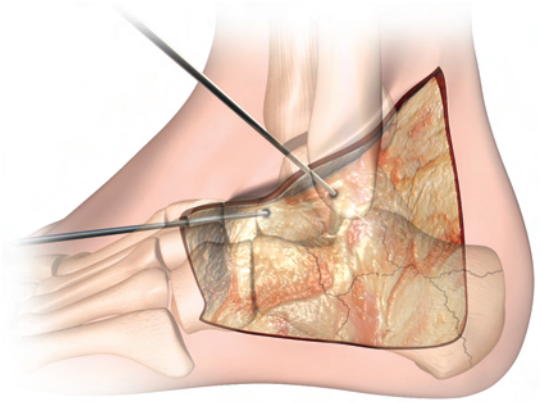
Begin the incision 2-3cm superior to the distal tip of the fibula just anterior to the Achilles tendon. Continue the incision parallel with the tendon down towards the posterior/inferior aspect of the calcaneus. Extend the incision horizontally along the inferior aspect of the calcaneus approximately 1-2cm past the calcaneocuboid joint.



This approach permits the raising of a single, full-thickness flap consisting of skin, soft tissue, peroneal tendons, the sural nerve and ankle ligaments.

K-Wires are placed in the lateral process of the talus, the distal fibula and/or the cuboid in order to retract the flap.

Note Avoid prolonged flap retraction.



Fracture Reduction and Provisional Fixation

Reduce and provisionally fix the fracture under fluoroscopy with K-Wires, paying particular attention to the reduction of any articular fractures. Reduction aids should be placed so as to not interfere with final plate placement.

Note A 5.0mm JET-X◇ Half Pin and AO T-Handle Connector (7106-3001) may be used as a joy-stick to reduce fracture fragments*.

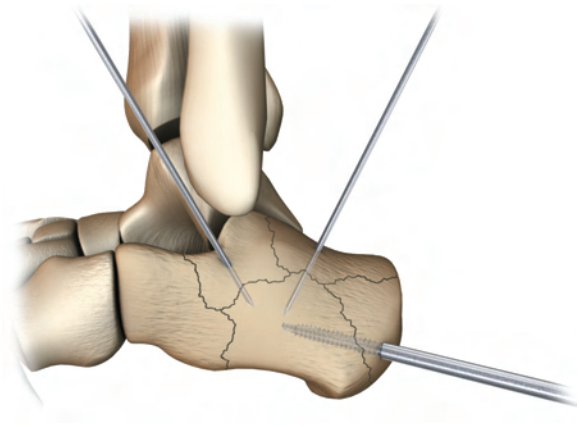
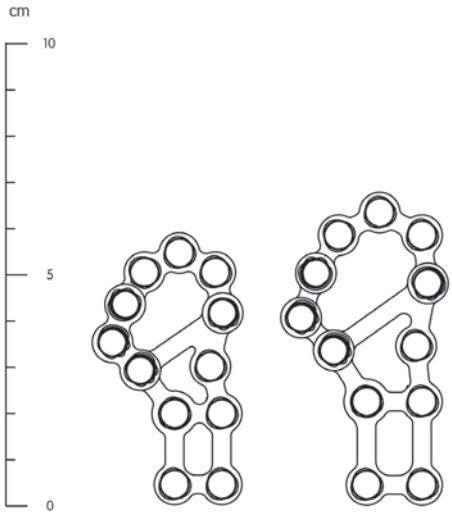


Plate Selection

Following fracture reduction, select the Calcaneal Locking Plate that best accommodates patient anatomy and fracture pattern.

Note The PERI-LOC◇ Calcaneal Locking Plate Preoperative Template (7118-0920) is available to assist with preoperative radiographic planning.



PERI-LOC Calcaneal Locking Plate Preoperative Template
Cat. No. 7118-0920

* 5.0mm Half Pins are located in the JET-X Bar Implant Set (7106-9289) and the AO T-Handle Connector is located in the JET-X Bar Instrument Set (7106-9300)

Plate Contouring

Occasionally, minor plate contouring is required prior to implantation. If necessary, thread two 2.7mm Locking Drill Guides-One Piece (7117-3450) into adjacent plate holes as desired. Apply minimal incremental force until the desired contour is achieved.

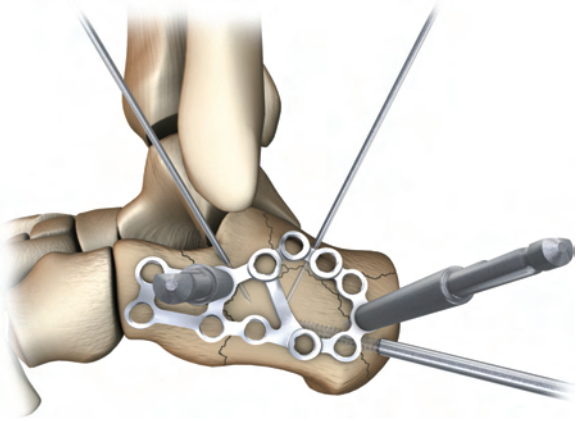
Note Avoid excessive bending pressure as the Locking Drill Guide may dislodge and damage the screw hole threads.



Plate Positioning

Provisionally fix the plate to the bone using two 2.7mm x 18mm Provisional Fixation Pins (7117-3322). Avoid over insertion due to lack of medial soft tissue coverage.

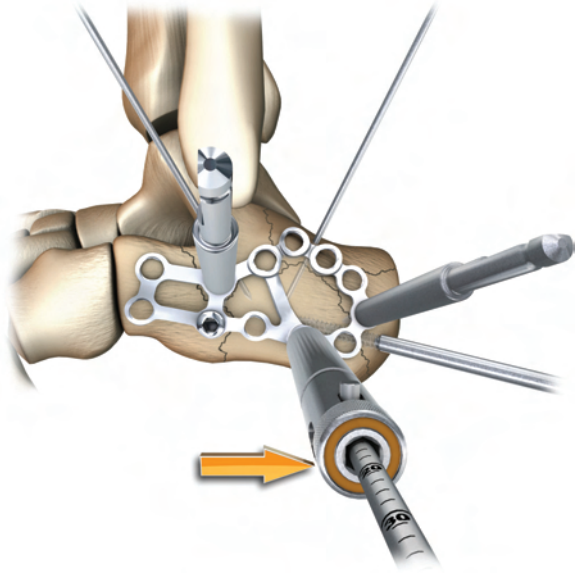
Note Provisional Fixation Pins may be inserted on power, but should always be tightened by hand in order to avoid stripping.



Screw Insertion

3.5mm Locking Screw
Thread the 3.5mm Locking Drill Guide (7117-3538) with 2.7mm Locking Drill Guide Insert (7117-3529)* into the desired hole and drill accordingly with the 2.7mm Drill Bit (7117-3503).

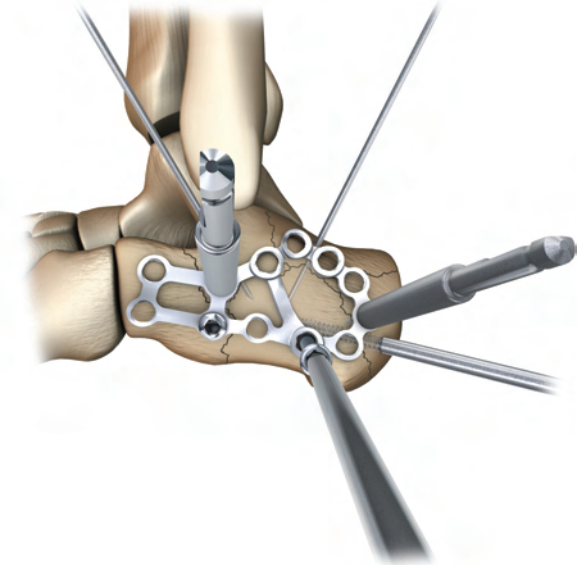
Measure for screw length by reading the exposed calibrations off the drill bit or by using the 3.5mm Short Screw Depth Gauge (7117-3523).



Attach the 3.5mm Hexdriver w/AO Quick Connect (7117-3537) to the Large Screwdriver Handle (7117-3547) and insert the appropriate length 3.5mm Self-Tapping Locking Screw.

Care should be taken to not over-penetrate the far cortex of the calcaneus due to its lack of soft tissue coverage.

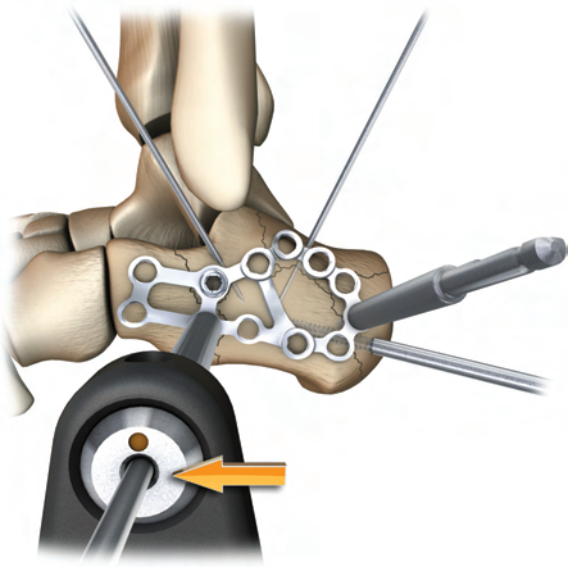
Note Locking screws may be inserted on power, but should always be tightened by hand in order to avoid loss of reduction, stripping of the screw head or damage to the screwdriver.



* The 2.7mm Locking Drill Guide-One Piece may be substituted for the 3.5mm Locking Drill Guide with 2.7mm Locking Drill Guide Insert
** Screws may be inserted through the 3.5mm Drill Guide assembly, but it must be removed prior to insertion of a screw less than 24mm in length

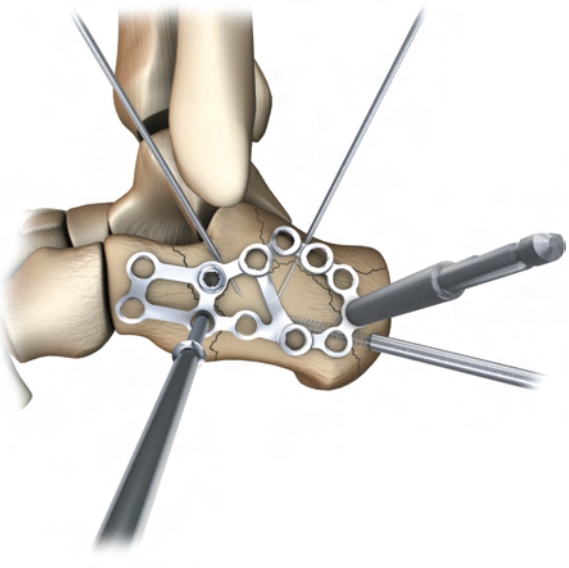
3.5mm Cortex Screw
Insert the Universal Drill Guide Handle (7117-3349) with 2.7mm Neutral Locking Hole Insert (7117-3514) into the desired hole and drill accordingly with the 2.7mm Drill Bit.

Measure for screw length by reading the exposed calibrations off the drill bit or by using the 3.5mm Short Screw Depth Gauge.



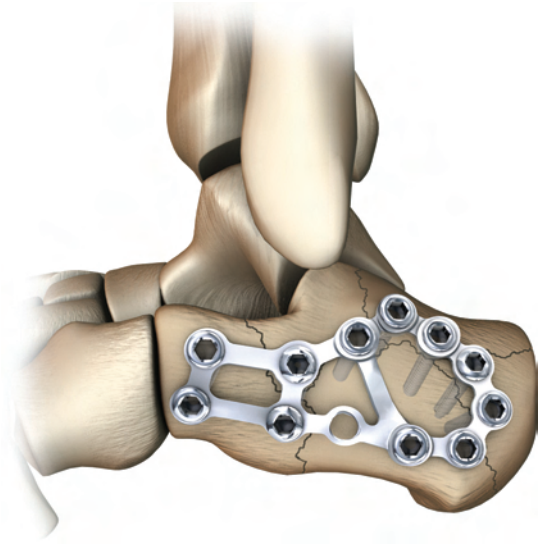
Insert the appropriate length 3.5mm Self-Tapping Cortex Screw using the 3.5mm Hexdriver/Screwdriver Handle assembly. Fill remaining screw holes as desired.

Note If non-locking screws are to be used in the plate to gain compression, it is advised that they be inserted prior to any locking screws.

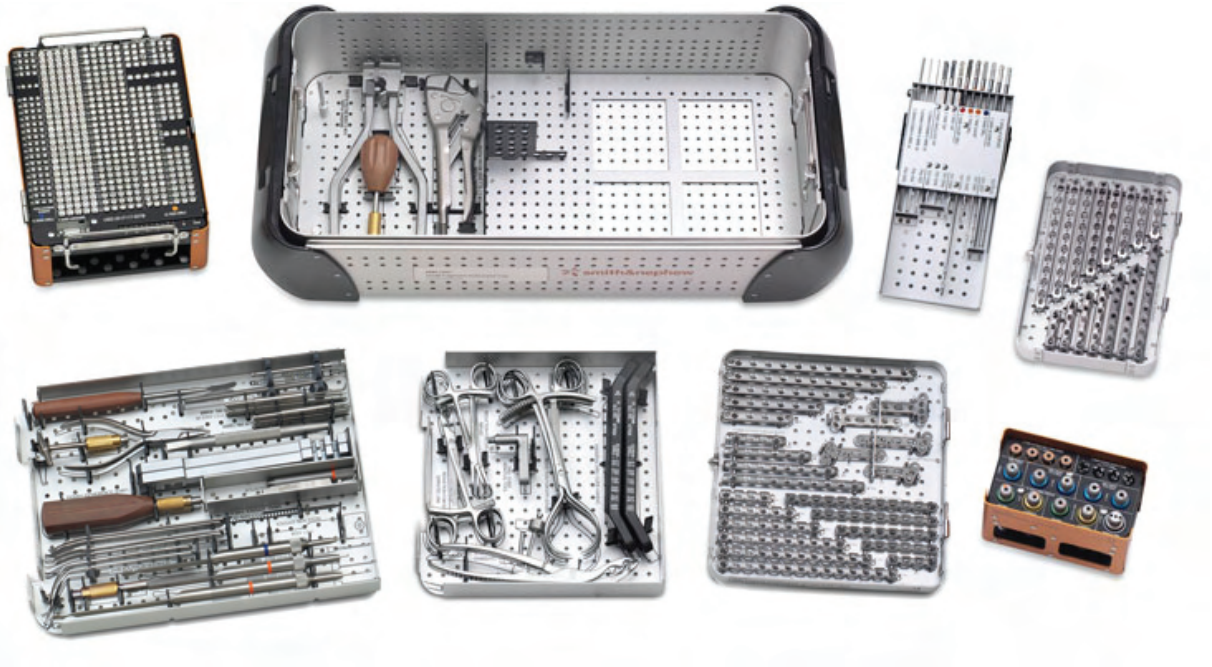


Closure

Obtain final lateral and axial radiographic images to confirm screw placement and fracture reduction. Wound closure follows standard technique.



Catalog Information



PERI-LOC◇ Small Fragment Instrument, Implant and Disposables Set

Set No. 7181-0220

Instrument Cases

Cat. No.	Description
7112-9400	Large Outer Case
7112-9402	Lid for Outer Case
7117-0350	Small Fragment Drill Guide Caddy
7117-0352	Small Fragment Straight Locking Plate Caddy
7117-0353	Small Fragment Straight Plate Caddy
7117-0354	Small Fragment Screw Caddy
7117-0359	Small Fragment Drill Caddy
7117-0361	Small Fragment Instrument Tray

Instruments

Cat. No.	Description	Tray Qty
7117-0043	Sharp Hook	1 ea
7117-0045	Screw Forceps	1 ea
7117-0057	Hohmann Retractor, 8mm	2 ea
7117-0063	Wire Bending Pliers, 140mm	1 ea
7117-0076	Bending Pliers for 2.7mm & 3.5mm Plates	1 ea
7117-0095	Hohmann Retractor, 15mm	2 ea
7117-0097	Periosteal Elevator	1 ea
7117-0175	Bending Pliers for 3.5mm Reconstruction Plates	1 ea
7117-3344	Countersink	1 ea
7117-3349	Universal Drill Guide Handle	2 ea
7117-3369	Hohmann Retractor, Bent, 8mm	2 ea
7117-3370	Reduction Forceps w/Ratchet, 205mm	2 ea
7117-3377	Reduction Forceps w/Points, Broad	2 ea
7117-3378	Reduction Forceps w/Serrated Jaw	2 ea
7117-3482	Small Fragment Bending Irons	2 ea
7117-3487	3.5mm Self-Retaining Hexdriver Shaft w/AO Quick Connect, 178mm	2 ea
7117-3510	2.7mm Drill Guide Insert	2 ea
7117-3511	2.7mm Compression Slot Insert	1 ea
7117-3512	2.7mm Neutral Slot Insert	1 ea
7117-3513	3.5mm Drill Guide Insert	2 ea
7117-3514	2.7mm Neutral Locking Hole Insert	1 ea
7117-3515	2.7mm Compression Locking Hole Insert	1 ea
7117-3516	2.0mm Parallel Wire Drill Guide	1 ea
7117-3517	2.0mm Wire/Drill Insert	1 ea
7117-3523	Short 3.5mm Screw Depth Gauge	1 ea
7117-3525	2.7mm Screw Depth Gauge	1 ea
7117-3527	Cannulated K-Wire Bending Iron	1 ea
7117-3528	Cannulated AO-to-Trinkle Adaptor	1 ea
7117-3529	2.7mm Locking Drill Guide Insert	4 ea
7117-3534	3.5mm Screw Depth Gauge	1 ea

Instruments (continued)

Cat. No.	Description	Tray Qty
7117-3535	2.5mm Hexdriver Shaft w/AO Quick Connect, 177mm	2 ea
7117-3538	3.5mm Locking Screw Guide	4 ea
7117-3542	Small T-Handle w/AO Quick Connect	1 ea
7117-3543	Teardrop Handle Screwdriver w/AO Quick Connect	1 ea
7117-3544	Self-centering Reverse Verbrugge Forceps, 190mm	1 ea
7117-3547	Large Screwdriver Handle w/AO Quick Connect	1 ea
7117-3549	Small Fragment Drill Guide Removal Tool	1 ea

Optional Instruments*

Cat. No.	Description	Tray Qty
7117-3488	3.5mm Self-Retaining Hexdriver Shaft w/AO Quick Connect, 119mm	1 ea
7117-3450	2.7mm Locking Drill Guide-One Piece	1 ea

Disposables

Cat. No.	Description	Tray Qty
7116-1012	1.25mm x 150mm K-Wire w/Trocar Point	6 ea
7116-1016	1.6mm x 150mm K-Wire w/Trocar Point	6 ea
7116-1020	2.0mm x 150mm K-Wire w/Trocar Point	6 ea
7117-3318	3.5mm Tap w/AO Quick Connect	2 ea
7117-3366	2.7mm Tap w/AO Quick Connect	2 ea
7117-3386	4.0mm Tap w/AO Quick Connect	2 ea
7117-3322	2.7mm x 18mm Provisional Fixation Pin	4 ea
7117-3323	2.7mm x 40mm Provisional Fixation Pin	4 ea
7117-3501	2.0mm Calibrated Drill Bit w/AO Quick Connect, 190mm	2 ea
7117-3555	2.0mm Short Calibrated Drill Bit w/AO Quick Connect, 93mm	2 ea
7117-3502	2.7mm Short Calibrated Drill Bit w/AO Quick Connect, 155mm	2 ea
7117-3503	2.7mm Calibrated Drill Bit w/AO Quick Connect, 228mm	2 ea
7117-3504	3.5mm Short Calibrated Drill Bit w/AO Quick Connect, 155mm	2 ea

Implants

2.7mm Self-Tapping Cortex Screws

Cat. No.	Length
7182-3010	10mm
7182-3012	12mm
7182-3014	14mm
7182-3016	16mm
7182-3018	18mm
7182-3020	20mm
7182-3022	22mm
7182-3024	24mm
7182-3026	26mm
7182-3028	28mm
7182-3030	30mm
7182-3032	32mm
7182-3034	34mm
7182-3036	36mm
7182-3038	38mm
7182-3040	40mm
7182-3045	45mm
7182-3050	50mm
7182-3055	55mm
7182-3060	60mm
7182-3065	65mm
7182-3070	70mm

*Not included in Set No. 7181-0220

Catalog Information

3.5mm Self-Tapping Cortex Screws

Cat. No.	Length
7182-4010	10mm
7182-4012	12mm
7182-4014	14mm
7182-4016	16mm
7182-4018	18mm
7182-4020	20mm
7182-4022	22mm
7182-4024	24mm
7182-4026	26mm
7182-4028	28mm

Cat. No.	Length
7182-4030	30mm
7182-4032	32mm
7182-4034	34mm
7182-4036	36mm
7182-4038	38mm
7182-4040	40mm
7182-4045	45mm
7182-4050	50mm
7182-4055	55mm
7182-4060	60mm

Cat. No.	Length
7182-4065	65mm
7182-4070	70mm
7182-4075	75mm
7182-4080	80mm
7180-4085*	85mm
7180-4090*	90mm
7180-4095*	95mm
7180-4100*	100mm
7180-4105*	105mm
7180-4110*	110mm

3.5mm Self-Tapping Locking Screws

Cat. No.	Length
7182-5010	10mm
7182-5012	12mm
7182-5014	14mm
7182-5016	16mm
7182-5018	18mm
7182-5020	20mm
7182-5022	22mm
7182-5024	24mm
7182-5026	26mm
7182-5028	28mm

Cat. No.	Length
7182-5030	30mm
7182-5032	32mm
7182-5034	34mm
7182-5036	36mm
7182-5038	38mm
7182-5040	40mm
7182-5045	45mm
7182-5050	50mm
7182-5055	55mm
7182-5060	60mm

Cat. No.	Length
7182-5065	65mm
7182-5070	70mm
7182-5075	75mm
7182-5080	80mm
7180-5085*	85mm
7180-5090*	90mm
7180-5095*	95mm
7180-5100*	100mm
7180-5105*	105mm
7180-5110*	110mm

4.0mm Cancellous Screws, Fully Threaded

Cat. No.	Length
7182-5210	10mm
7182-5212	12mm
7182-5214	14mm
7182-5216	16mm
7182-5218	18mm
7182-5220	20mm
7182-5222	22mm
7182-5224	24mm
7182-5226	26mm
7182-5228	28mm

Cat. No.	Length
7182-5230	30mm
7182-5232	32mm
7182-5234	34mm
7182-5236	36mm
7182-5238	38mm
7182-5240	40mm
7182-5245	45mm
7182-5250	50mm
7182-5255	55mm
7182-5260	60mm

Cat. No.	Length
7182-5265	65mm
7182-5270	70mm
7182-5275	75mm
7182-5280	80mm
7180-5285*	85mm
7180-5290*	90mm
7180-5295*	95mm
7180-5300*	100mm

* Available sterile only

4.0mm Cancellous Screws, Partially Threaded

Cat. No.	Length
7182-5310	10mm
7182-5312	12mm
7182-5314	14mm
7182-5316	16mm
7182-5318	18mm
7182-5320	20mm
7182-5322	22mm
7182-5324	24mm
7182-5326	26mm
7182-5328	28mm

Cat. No.	Length
7182-5330	30mm
7182-5332	32mm
7182-5334	34mm
7182-5336	36mm
7182-5338	38mm
7182-5340	40mm
7182-5345	45mm
7182-5350	50mm
7182-5355	55mm
7182-5360	60mm

Cat. No.	Length
7182-5365	65mm
7182-5370	70mm
7182-5375	75mm
7182-5380	80mm
7180-5385*	85mm
7180-5390*	90mm
7180-5395*	95mm
7180-5400*	100mm

Washer, 7.0mm Outer Diameter

Cat. No. 7114-3107

3.5mm Calcaneal Locking Plates

Cat. No.	Description	Length
7182-1200*	Large, Left	68mm
7182-1201*	Large, Right	68mm
7182-1202*	Small, Left	60mm
7182-1203*	Small, Right	60mm

Note PERI-LOC Foot and Ankle Locking Plate Tray (7181-0040) will accommodate Large and Small Calcaneal Locking Plates (non-sterile)

* Available sterile only



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